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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/894,874	06/29/2001	Soon Sung Yoo	041501-5432	3407

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EXAMINER	
KIELIN, ERIK J	

ART UNIT	PAPER NUMBER
2813	

DATE MAILED: 03/19/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/894,874	YOO ET AL.	
	Examiner	Art Unit	
	Erik Kielin	2813	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *07 January 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) *10-18* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-9,19 and 20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 7 January 2004 has been entered.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. Claims 1-9 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Independent claims 1 and 6 require that the entire upper and side surfaces of the transparent conductive layers be covered with an anisotropic conductive film; yet, the instant figures show that some side surfaces of the transparent conductive layer are covered by an insulating film. Accordingly, the entire upper and side surfaces are not covered with an anisotropic conductive film.

4. Claims 1-9 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

Independent claims 1 and 6 require that the entire upper and side surfaces of the transparent conductive layers be covered with an anisotropic conductive film. The specification does not provide how this limitation could be provided, since insulating layers are shown in the instant figures to be contacting the side surface.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims **1**, 4, and 5 are rejected under 35 U.S.C. 102(b) as being anticipated by US 6,016,174 (**Endo** et al.).

Endo discloses a pad structure (called "connecting terminal" in Endo) for a liquid crystal display, comprising:

a substrate (col. 14, lines 55-56);

a plurality of gate pads and data pads **20**, **24** formed on the substrate (Figs. 3, 4, and 14; col. 14, lines 18-27);

an insulating film **3**, **8** formed on surfaces of the gate pads and data pads **20, 24**;

a plurality of transparent conductive layers **22, 26** electrically connected to the gate pads and the data pads **20, 24** (col. 19, lines 9-61); and

an anisotropic conductive film formed on the transparent conductive layers **22, 26** to cover entire upper and side surfaces of the transparent conductive layers (not shown but expressly indicated at paragraph bridging cols. 11-12 --especially the last sentence-- and at col. 23, lines 9-42 --especially the last two sentences).

Regarding claim 4, the transparent conductive layer **22, 26** includes indium tin oxide (col. 19, lines 9-61).

Regarding claim 5, the insulating film **3, 8** is formed by laminating a gate insulating film **3** and a protective film **8** (called "passivation film 8" Fig. 3).

7. Claims **19** and **20** are rejected under 35 U.S.C. 102(b) as being anticipated by US 5,966,589 (**Watanabe** et al.).

Regarding claim 19, **Watanabe** discloses a pad structure for a liquid crystal display, comprising:

a substrate **18** (Figs. 4-6: Figs. 5 and 6 are cross-section of Fig. 4);

at least one pad **3, 5, 9** formed on the substrate **18**;

an insulating film **13-15** formed on the pad **3, 5, 9** the insulating film covering side surfaces of the pad **3, 5, 9** and a portion of the substrate **18** adjacent to the side surfaces of the pad; and

at least one conductive layer **12** connected to the pad **3, 5, 9** through contact holes **10a, 10b, 10c** defined through the insulating film **13-15**.

Regarding claim 20, **Watanabe** discloses a liquid crystal display formed on a substrate **1**, comprising:

an active region defined at a first portion of the substrate (called "DISPLAY PORTION" IN Fig. 3e); and

a pad contact area (called "terminal 100") defined on a second portion of the substrate adjacent to the active region (Fig. 3D), the pad contact area including:

at least one pad **3, 5, 9** formed on the substrate **18,**

an insulating film **13-15** formed on the pad **3, 5, 9,**

at least one conductive layer **12** connected to the pad **3, 5, 9** through contact holes **10a, 10b, 10c** defined through the insulating film **13-15**, wherein the insulating film **13-15** covers the side surfaces of the pad and a portion of the substrate **18** adjacent to the side surfaces of the pad (Fig. 3A; col. 6, lines 9-38).

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

9. Claims **1**-3 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Watanabe** in view of **Endo**.

Regarding claim 1, **Watanabe** discloses a pad structure for a liquid crystal display, comprising:

a substrate **18** (Figs. 4-6: Figs. 5 and 6 are cross-section of Fig. 4);

a plurality of gate pads and data pads **3, 5, 9** formed on the substrate **18**;

an insulating film **13-15** formed on surfaces of the gate pads and data pads **3, 5, 9**;

a plurality of transparent conductive layers **12** electrically connected to the gate pads and the data pads **3, 5, 9**; and

an anisotropic conductive film formed on the transparent conductive layers **12** (col. 9, lines 51-64).

Watanabe does not indicate the extent of coverage of the transparent conductive layers **12** with the anisotropic conductive film.

As noted above, **Endo** teaches a pad structure for a liquid crystal display teaches that the anisotropic conductive film should be formed over the entire terminal (i.e. pad) in order to protect the transparent conductive film from damage/corrosion due to humidity even if the transparent conductive film cracks. (See Endo, paragraph bridging cols. 11-12 --especially the last sentence-- and at col. 23, lines 9-42 --especially the last two sentences.)

It would have been obvious for one of ordinary skill in the art, at the time of the invention to cover the entirety of the upper and side surfaces of the transparent conductive film of **Watanabe** with the anisotropic conductive film in order to provide reliable electrical connection to the pads while protecting the connection from damage and corrosion due to humidity, as taught to be beneficial in **Endo**.

Regarding claim 2, **Watanabe** discloses the insulating film **13-15** extends over side surfaces and upper surfaces of the gate pads and the data pads **3, 5, 9** (Figs. 4-6).

Regarding claim 3, **Watanabe** discloses the insulating film **13-15** contacts the substrate **18** at end portions of the gate pads and data pads **3, 5, 9** (Figs. 4-6).

10. Claims **6**-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Watanabe** in view of **Endo** and further in view of Applicant's admitted prior art (**APA**).

The prior art of **Watanabe** in view of **Endo**, as explained above, discloses each of the claimed features except for the grinding area.

Regarding independent claim 6, **Endo** discloses a pad structure for a liquid crystal display including a pad contact area and an anisotropic conductive film deposit area, the pad structure comprising:

APA teaches that it is known in the art for a pad structure to have a grinding area **II** (APA prior art Figs. 1 and 2; instant specification paragraphs [0010]-[0013]).

It would have been obvious for one of ordinary skill in the art, at the time of the invention to have a grinding area in the pad structure of **Watanabe**, because **APA** teaches that this is conventional in the art.

Regarding claim 7, **Watanabe** discloses that the insulating film **13-15** is formed on side surfaces and upper parts of the gate and data pads **3, 5, 9**.

Regarding claim 8, **Watanabe** discloses that the gate and data pads **3, 5, 9** are formed on a substrate **18**, and the insulating film **13-15** contacts the substrate at end portions of the gate pads and data pads **3, 5, 9**.

Regarding claim 9, **Watanabe** discloses that the gate insulating film is formed between the gate and data pads.

Conclusion

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

US 6,184,966 B1 (**Fujita** et al.) anticipates instant claims 19 and 20. See all Figs.

JP 3-289627 (**Watanabe**) teaches completely covering the terminal connection including ITO with anisotropic conductive film. See Abstract Fig. 4b.

JP 3-221923 (**Yasuda** et al.) teaches completely covering the terminal connection including ITO with anisotropic conductive film. See Abstract Fig. 1b.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Erik Kielin whose telephone number is 571-272-1693. The examiner can normally be reached on 9:00 - 19:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Carl Whitehead, Jr. can be reached on 571-272-1702. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Erik Kielin
Primary Examiner
11 March 2004